



MEMORANDUM

CH2MHILL

Ohio EPA File Review for the Delphi Corporation Wisconsin Boulevard Facility, Dayton, Ohio

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COPIES: Brett Fishwild/CH2M HILL

FROM: David Boehnker/CH2M HILL

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On March 3, 2010, a CH2M HILL representative reviewed files in Ohio Environmental Protection Agency's (Ohio EPA's) Hazardous Waste Division regarding the Delphi Corporation Wisconsin Boulevard facility in Dayton, Ohio (Delphi facility). The Delphi facility is located north of the South Dayton Dump across the Great Miami River. The facility is being regulated under the Resource Conservation and Recovery Act (RCRA). A RCRA facility investigation (RFI) (*RCRA Facility Investigation, Delphi Corporation, Wisconsin Boulevard Facility, Dayton, Ohio* [Haley & Aldrich 2008]) performed at the site identified the presence of volatile organic compounds (VOCs), including trichloroethene (TCE), and its degradation products in groundwater beneath the facility. The purpose of the file review was to identify the effects, if any, that groundwater flow and groundwater contamination may have on groundwater contamination beneath and around the South Dayton Dump site, particularly in the deeper portions of the aquifer. The reviewed files consisted mainly of the draft RFI report, which Ohio EPA is reviewing, and quarterly progress reports dating back several years.

Several geologic cross-sections in the RFI report indicate the presence of a layer of fine-grained soils including silts, clays, and till referred to in this memorandum as the "till layer." The till layer varies in thickness and occurs beneath the Delphi facility between the general elevations of 600 and 660 feet above mean sea level (amsl). The draft RFI report describes the till layer as separating the shallow and deep portions of the aquifer underlying the Delphi facility (Haley & Aldrich 2008). Cross sections D-D' and E-E' from the draft RFI report, both of which terminate near the Dryden Road bridge (between the Delphi facility and the South Dayton Dump site), show that the till layer pinches out at an elevation of approximately 650 feet amsl and is absent near the Great Miami River in the vicinity of the Dryden Road bridge. South of the Great Miami River, Conestoga Rovers & Associates (CRA) cross-sections A-A' and B-B' (*Phase I Groundwater Report, South Dayton Dump and Landfill Site* [March 2009]) also indicate that a till layer beneath the South Dayton Dump site pinches out near the Great Miami River in the vicinity of the Dryden Road bridge, indicating that a till layer may be absent beneath the Great Miami River near the Dryden Road bridge.

Three depths of groundwater monitoring wells have been installed at the Delphi facility: wells screened in the upper portion of the shallow aquifer are designated as "S," wells screened in the lower portion of the shallow aquifer just above the till layer as "S2," and wells screened in the deeper portion of the aquifer (below the till layer) as "D." The "D" deep wells are screened at depths of approximately 60 to 70 feet below ground level in the southern portion of the Delphi facility.

Shallow Aquifer Groundwater Flow

Groundwater flow maps in the draft RFI report for the shallow well network show hydraulic gradients in a general easterly direction beneath the eastern side of the facility, interpreted in the draft RFI report as groundwater flowing toward the University of Dayton (UD) Arena's network of dewatering wells (Haley & Aldrich 2008). One UD Arena dewatering well log (log number 764242) is on file with Ohio Department of Natural Resources; this well was drilled in 1993, is 79 feet deep and 16 inches in diameter, and was tested at 974 gallons per minute (gpm). The well log indicates clay at depths of 40 to 45 feet, and at 79 feet; whether either of these clay units is connected to the till layers beneath the Delphi facility and South Dayton Dump is uncertain. Shallow groundwater beneath the western portion of the facility is more uncertain, but appears to be flowing to the south (toward the Great Miami River).

Also noted on the groundwater flow maps is the presence of a low head hydraulic dam in the Great Miami River approximately 150 feet east of the Dryden Road bridge. Water on the east side of the dam is approximately 5 feet higher than on the west side. The groundwater flow maps show shallow groundwater flowing locally to the west around the north end on the dam, based on surface water elevations in the river. The draft RFI report also describes the Great Miami River to be a losing river east of the dam (water flowing from the river into the shallow aquifer) because of the UD Arena dewatering wells (Haley & Aldrich 2008). However, since Delphi has not installed any wells beneath or adjacent to the river, this interpretation is based on an assumption of good hydraulic communication between the river and the aquifer.

Deep Aquifer Groundwater Flow

Groundwater in the deep aquifer flows toward the southeast, and appears to be influenced by pumping from production well PW-9, which is located in the southeast portion of the Delphi facility.

VOCs in Shallow Aquifer

VOCs, including TCE; cis-1,2-dichloroethene (cis-1,2-DCE); and vinyl chloride, were detected in wells screened in all three well depth categories at the Delphi facility. The highest VOC concentrations occurred in wells screened in the lower portion of the shallow aquifer (the "S" wells just above the till layer). These wells appear to have been installed based on the interpretation that groundwater in the shallow aquifer flows to the east, as there are no wells screened just above the till layer in the southern portion of the Delphi facility (e.g., across the river and upgradient from the South Dayton Dump site). Wells in the west-central portion of the Delphi facility (e.g., MW-05S2 and MW-33S2) contained TCE concentrations of 410 and 610 micrograms per liter ($\mu\text{g/L}$) in 2007. Since groundwater beneath the western portion of the facility may flow to the south toward the Great Miami River and potentially the South Dayton Dump site, the potential exists for TCE to migrate in

the deeper portion of the shallow aquifer across the river to the South Dayton Dump site. If a till layer is not present beneath the river in the area of the Dryden Road bridge, shallow groundwater could potentially migrate to the deeper aquifer in this area, depending on the hydraulic gradients of the shallow and deep aquifers and the river.

Monitoring well MW-30S, which is screened in the upper portion of the shallow aquifer and is located in the southern portion of the Delphi facility near the intersection of Dryden Road and Nicholas Road, has contained TCE ranging from 2.6 to 93 µg/L during the quarterly sampling in 2008, and 180 µg/L in the first quarter of 2007. The draft RFI report interprets shallow groundwater in this vicinity to potentially flow south toward the river (Haley & Aldrich 2008); whether this shallow groundwater flows south beneath the river would depend on its interaction with the river, which is unstudied at this point.

VOCs in Deep Aquifer

VOCs in the deep aquifer were generally lower than in the upper and deeper portions of the shallow aquifer. Given the easterly groundwater flow toward production well PW-9, the effects of the deep groundwater quality on the South Dayton Dump site are uncertain.

is already provided for this area in the report for 1960, and by 1970 this area appears to have been built over. Again, of special interest are excavations and pits, and any areas where drums or liquid wastes may have been disposed.

Your office provided me a copy of all the stereo pairs obtained during the air photo analysis (although not all of them were used for the report), so if you do not have copies in the file please let me know and I can easily return them to you.

Thank you so much for your time and assistance in this matter. I have always found EPA's air photo analyses to be a valuable tool in characterizing sites. Once I have some idea of how much effort this would take and what kind of time frame we are looking at, I will meet with the site team and then work with Steve Ostrodka in Region 5's Superfund Field Services Section to formalize the request.

If you have any questions or would like to discuss this further, please feel free to contact me at (312) 886-1843 or via email at cibulskis.karen@epa.gov.

cc: Tom Nash, ORC (via e-mail)